torrent of heated water. In this case, the fog which is seen to rise from the river is caused by the cold water condensing the vapour of the warmer air above it, which at the time happens to be near the point of saturation. Similarly, the Mississippi, which flows directly from colder into warmer latitudes, is often enveloped in mists or fogs. On the other hand, when the waters of a river are considerably warmer than the air over them, the vapour rising from them is condensed into fog by the colder air through which it ascends; and in such cases the fog will be the denser in proportion to the stillness of the air and its nearness to the point of saturation.

What have been called radiation fogs make their appearance during calm clear nights when the air in contact with the ground gets cooled by radiation, and becoming thereby heavier necessarily flows downwards in much the same way as water, towards the lowest levels, and floods all the low-lying grounds, mingling with and diffusing itself through the moister air of the low grounds, and condensing its more abundant vapour into fog.

Still further in such calm cold weather as has been prevalent for some weeks in the south of England, the temperature of the land falls at a greatly more accelerated rate than that of the sea. When this happens the interchange of light airs and light breezes which set in from the sea landwards and *vice versâ* along a considerable extent of coast, mixes the colder with the warmer and more humid air-currents, and thereby lays a thick covering of fog over the surface.

There is yet another fog of great significance in the study of atmospheric circulation, which spreads over a much wider extent than any of the other fogs referred to. This is the fog which is frequently found in the region of the outskirts of the anticyclone, or rather in the debatable region between the cyclone and the anticyclone. The most probable explanation of it is that it arises from the diffusion of the vapour brought up by the cyclone outwards and through the colder and drier air of those parts of the anticyclone contiguous to it, where it is condensed into immense breadths of fog frequently stretching several hundred miles in length. Much yet remains to be done in instituting, even, an exact and systematic observation of this important weather phenomenon from the results of which we might hope to come at some knowledge of its true meaning and its significance in forecasting weather, particularly those changes of weather which terminate long tracts of fine dry weather.

Now if we examine the weather charts from new year's day to the present time, it is seen that the south-east of England has been constantly either within anticyclones or under their immediate influence, the centres of which kept shifting to and fro over a rudely shaped quadrilateral marked off by Corunna, Sligo, Copenhagen, and Bucharest. During nearly the whole of this time, London has been within the belt of fog and mist which continuously, or discontinuously, has been skirting the margin of these anticyclones. At the same time the air has been unusually calm. Thus at Greenwich for the four weeks ending January 31, the mean daily horizontal movement of the air was only 144 miles, being 182 miles less than the average; and during the five foggy days in the last week of January the daily movement of the air was 269 miles under the average.

Hence, then, the fogs which London has had in common with the south of England and parts of the continent opposite, have been intensified by the low temperatures and still atmosphere bringing from time to time their contributions of radiation fogs and other fogs, still denser, drifting ever and anon through the heart of the city from the adjoining sheets of salt and fresh water. The last touch in the production of the very worst character of these fogs was doubtless given by the smoke of London, in the manner explained by Sir John Herschel in his "Meteorology," whereby each particle of soot acting as an insulated radiant, collects dew on itself, and sinks rapidly down through the fog as a heavy body, thus giving to these fogs their yellow thick consistency and the suffocating and unwholesome sensation experienced in breathing them.

In the weekly reports of the Registrar-General for December, 1873, several deaths are certified as having been more or less directly caused by the extraordinarily dense fogs which then prevailed; and in one of the reports it is remarked that "In the large provincial towns, where the same cold weather was unaccompanied by fog, the increase in the mortality was slight compared with that which occurred in London." In the last week of January, when the fog was so dense, the deaths in London from whooping-cough rose to 193,—a fatality from this disease hitherto unexampled in the London bills of mortality. A careful examination of the weather and health of London, particularly as regards the deaths resulting from throat and nervous complaints, could not fail to contribute materially to the diffusion of a better knowledge than we yet possess of the influence of these fogs on the public health.

NOTES

DR. BROCA, the eminent anthropologist, has been elected a life member of the French Senate by a majority of eight. This election has created some sensation, Dr. Broca's nomination having been opposed on the ground of his Darwinist opinions. Dr. Broca opened the last meeting of the Anthropological Society by a short address, in which he considered his election as a victory gained not only by his political, but also by his scientific opinions.

ALMOST a panic has occurred amongst the wine-growers of Cape Colony, in consequence of the supposition that not only was the *Phylloxera* causing the destruction of some of the choicest vines, but that it had existed there, undetected, for several years. An influential, and somewhat animated, meeting was held at Cape Town to discuss the subject. We understand that samples of the vines, supposed to have been attacked by the pest, were forwarded to the Colonial Office and sent on to Kew, and that these have been examined by Mr. McLachlan, who is of opinion that all the characteristic signs of the action of *Phylloxera* are absent, and that nothing is shown to induce uneasiness in the minds of South African wine-growers on this score. The samples had been packed in the worst possible condition for minute examination; but according to a report in a Cape paper, Mr. Roland Trimen, of Cape Town, had examined samples submitted to him on the spot, and pronounced a similar opinion. Some of the vines are undoubtedly in an unhealthy condition, from unexplained causes. It is to be hoped our Cape colonists will not allow panic to take possession of them, and, under its influence, rush into extremes. It is probable that some of the South European nationalities that have carried the absurdity of panic to its highest limit—to the extent of confiscating a bouquet of wild flowers in the hands of unsuspecting ramblers—unwittingly permit the importation of "contraband" vines to a large extent.

ACCORDING to the report of the French Phylloxera Commission, the pernicious insect has spread in a deplorable manner during the last two years, in spite of all measures to the contrary. The black patches on the maps of the Commission, and which represent those districts over which the plague has a complete hold, must be enlarged year after year. Great hope was placed in snow, but it proved futile, inasmuch as snow must cover the ground for at least forty-five days to destroy the insects, and nowhere has the snow lasted so long as that. About one-quarter of the French wine-growing districts are now destroyed. All disinfectants prove useless, and it seems hopeless

to attempt to arrest the progress of the plague. Prof. Raynal of Poitiers proposes, as a last remedy, the radical destruction of all vineyards situated at the boundary of the infected districts, and the establishment of a "neutral" zone.

THE Chair of Chemistry in the newly established Agricultural College of Berlin, is to be filled by Prof. H. Landolt, of Aix-la-Chapelle, well known by his exhaustive studies on the relations between the optical properties of bodies and their chemical constitution. His wide experience in saccharimetry has likewise led to his simultaneous appointment as director of the Chemical Laboratory established at Berlin by the German *Verein für Rübenzucker-Industrie*. Prof. Landolt is succeeded in the Polytechnic of Aix-la-Chapelle by Prof. A. Classen, who has recently published two favourably-received laboratory manuals on Qualitative and Quantitative Chemistry.

IT will be a surprise to many to learn, the *Gardeners' Chronicle* tells us, that General Munro, C.B., whose decease occurred on the 29th ult., had claims on the respect of his countrymen as a learned botanist as well as a distinguished soldier. He contrived to combine with his military duties such a knowledge of general botany and horticulture, and so close a study, so searching an investigation of the characters, affinities, nomenclature, and classification of grasses, as to have been for many years the most trustworthy referee in that difficult order. With the exception of a monograph on the Bamboos in the *Transactions* of the Linnean Society, General Munro found time to publish but little. That monograph, however, affords sufficient evidence of his ability, industry, and profound knowledge of his subject. It was elaborated, we believe, in one of the intervals of active service. When, two or three years since, he retired from the army and established himself near Taunton, he at once commenced a general monograph of the whole order. This was intended to form one of the monographs in the series of such works now being issued in continuation of the *Prodromus* by MM. Alphonse and Casimir de Candolle. To the abiding loss of botany this monograph remains incomplete. It is to be feared that a long time must elapse ere any competent monographer will take upon himself the irksome labour of elaborating such a work.

M. BERROT, the director of the École Normale Supérieure died at Paris on February 3, at the age of fifty-six.

THE *Photographic News* informs us that Prince Leopold is a good chemist and has a practical knowledge of photography.

THE fragments of the 38-ton gun destroyed for experimental purposes in the bursting-cell in the proof-grounds, Government Marshes, adjoining the Royal Arsenal, Woolwich, on Tuesday last, have all been recovered, and are found to number about 120 pieces. They have all been marked, and are being washed and arranged for inspection. The two projectiles were taken from the sand-butt in front of the gun, both broken in pieces, and it is evident from the appearance of the bore that they broke up before leaving the gun, the marks of the rifling being in parts quite effaced. The muzzle end of the steel tube, about 3 feet in length, is intact, with parts of the wrought iron super-coil remaining attached, and a singular appearance is presented by the rearmost end of this fragment, the steel having been violently rent and incurved as though a shot or lighter fragment, moving faster than itself, had overtaken it and struck it with considerable force. The crusher gauges fixed on both projectiles have been recovered, but give no positive data respecting the pressure produced by the explosion. A very great pressure had been expected, and the copper crushers had consequently been subjected to a pressure of thirty-five tons to the square inch before being inserted in the plugs. This pressure was not exceeded in the explosion, and the only apparent deduction arrived at of importance is that a strain which would not be alarming in the powder chamber has sufficed to burst the gun at the spot where its thickness and strength suddenly diminished.

THE publication is announced of a magnificently illustrated "Iconographical History of the Orchid," by M. E. de Puydt, Secretary of the Royal Society of Agriculturists at Mons.

THE *New York Herald* publishes a despatch from Havannah, of date January 28, stating that the recent earthquake was felt in San Diego, Santiago de las Vegas, Pinar del Rio, Cienfuegos, Mariel, and other places. The small town of San Cristobal was almost destroyed. On January 24, at 7.45 P.M., an earthquake was felt at Karlsruhe, Rastadt, and Spier. It appears to have consisted of three different shocks, the direction being from west to east, and the duration about ten seconds. The shock was also felt in Durlach, Mühlburg, Daxlanden, Eggenstein, Sollinger, Lenkenheim, Weingarten, Hittenheim, Philippsburg. The commotion was very great, principally in Pletteersdorf, close to Rastadt, where the inhabitants were so frightened that they left their houses. It appears that in the vicinity of Spier a second shock was felt on the 28th, from 3 to 4 A.M. A severe shock of earthquake occurred in the Kurrum Valley, Afghanistan, on the 8th inst. Smart shocks of earthquake were felt at Sion, in the Valais, on Saturday week.

AT a recent meeting of the Boston Society of Natural History, Mr. F. W. Putnam remarked on the character of the shell-heaps of the Atlantic and Pacific coasts of North America, and stated that there had been received at the Peabody Museum a small collection of articles taken from rude dolmens (or chambered barrows, as they would be called in England), recently opened by Mr. E. Curtiss, who is now engaged, under his direction, in exploration for the Peabody Museum. These chambered mounds are situated in the eastern part of Clay Co., Missouri, and form a large group on both sides of the Missouri River. The chambers are, in the three opened by Mr. Curtiss, about 8 feet square, and from 4½ to 5 feet high, each chamber having a passage-way several feet in length, and two in width, leading from the southern side, and opening on the edge of the mound formed by covering the chamber and passage-way with earth. The walls of the chambered passages were about 2 feet thick, vertical, and well made of stones which were evenly laid without clay or mortar of any kind. The top of one of the chambers had a covering of large flat rocks, but the others seem to have been closed over with wood. The chambers were filled with clay which had been burnt, and appeared as if it had fallen in from above. The inside walls of the chambers also showed signs of fire. Under the burnt clay, in each chamber, were found the remains of several human skeletons, all of which had been burnt to such an extent as to leave but small fragments of the bones, which were mixed with the ashes and charcoal. Mr. Curtiss thought that in one chamber he found the remains of five skeletons, and in another thirteen. With these skeletons there were a few flint implements and minute fragments of vessels of clay. A large mound near the chambered mounds was also opened, but in this no chambers were found. Neither had the bodies been burnt. This mound proved remarkably rich in large flint implements, and also contained well-made pottery and a peculiar "gorget" of red stone. The connection of the people who placed the ashes of their dead in the stone chambers with those who buried their dead in the earth-mounds is, of course, yet to be determined.

HER MAJESTY'S Consul at Hakodate, Japan, states in his just published report that a botanical garden has been started at that place. The matter originated with private individuals as the suggestion of a foreign lady, but the Kaitakushi, or Colonisation Department, has taken the matter in hand, and has started a public garden. In order to give it the character of a public

undertaking, every ward in the town was induced to work there one whole day, in addition to the regular workmen employed. The paths were smoothed by the singing girls and others, and finally all the officials took part in constructing the Fusiyama of the garden, without which no Japanese garden is complete.

As evidence of the enlightened condition of the Japanese as compared with their neighbours in China, it is interesting to learn from the *Hiogo News* that the duplex system of telegraphy with the Morse instrument has been in successful working for some months past on one of the longest of the Government lines, that between Yokohama, Kobe, and Nagasaki.

THE *North China Herald* understands that the investigations made by Mr. Chaloner Alabaster, H.M.'s Consul at Hankow, into the ancient religions and philosophies of China, have led him to the discovery that there is a very evident connection between them and modern masonry.

THE *Jahrbuch der Erfindungen*, by H. Gretschel and G. Wunder, 1879, does not profess to deal with the whole of the wide field of science. It discusses especially the progress of chemical technology, and of chemistry, which occupy nearly a half of the book; then, with the chief acquisitions of physics, and analyses several important works in astronomy and meteorology. The departments of chemistry and of physics are the best; without attempting to render science popular, the *Jahrbuch* of MM. Gretschel and Wunder gives a good scientific summary of the work accomplished, and it will be most useful for those who, without being specialists in chemistry and physics, wish to have trustworthy information as to the progress realised in these branches during the year.

WE have had occasion during the past year (NATURE, vol. xix. p. 398) to describe in detail the novel and interesting chemical industry, created by Prof. C. Vincent of Paris, which consists in the manufacture of methyl chloride from beet-root vinasses. The ingenious inventor has sought to increase the applications of the final product of his manufacture, hitherto confined to the production of methylated aniline colours and artificial cold, and has discovered a profitable and valuable employment for it in the extraction of the odoriferous principles of flowers for use in perfumery. For this purpose the gaseous methyl chloride is thoroughly purified by passing it through concentrated sulphuric acid, and then liquefied by strong pressure. The liquid chloride is introduced into the apparatus containing the flowers, and after remaining a few minutes in contact with them, passes into another apparatus where a vacuum has been produced. A rapid vaporisation followed by a renewed condensation brings the chloride back to its original state, while the odoriferous principles in company with waxy and fatty extracts are left behind. They are entirely freed from the latter and obtained in a high state of purity by simple treatment with cold alcohol. Apart from the ease and rapidity of the new method, it seems to cause much less change in natural perfumes than has hitherto been the case in distilling the flowers with water. The new process has already been mounted on a scale for treating a ton of flowers daily.

THE Emperor William has recently conferred the Order of the Red Eagle on Prof. Heeren, of the Hanover Polytechnic, Prof. Hattendorf, of the Polytechnic at Aix-la-Chapelle, and Professors Roth, Websky, and Wichelhaus, of the University of Berlin. Most of these decorations are in recognition of special services in developing the mineral resources of the country.

WE have received, as the first publication of the Willughby Society, a reduced photolithographic reproduction of Tunstall's "Ornithologia Britannica," edited by Prof. Alfred Newton, F.R.S. Other works in hand for the Society are Sir Andrew Smith's papers in the *South African Journal* and "Report" of his Exploring Expedition, and Defontaine's "Mémoire sur quelques nouvelles Espèces d'Oiseaux des Côtes de Barbarie" from "Hist. de l'Acad. des Sciences," 1787. The Secretary of the Society is Mr. F. Du Cane Godman, 10, Chandos Street, Cavendish Square, W.

M. W. DE FONVIELLE writes us that the works for disincumbering the Loire of ice at Saumur are progressing favourably. It is estimated that on February 7 not less than 50,000 cubic metres of ice blocks were exploded and sent adrift with the current. M. Varoy, the Minister of Public Works, has communicated to his colleagues in council despatches announcing that no danger is to be now apprehended from the impending swelling of the Loire. One of the greatest difficulties in demolishing the ice-blocks was the small quantity of water in the river, but owing to the change of weather, the Loire is swelling rapidly. One of the peculiarities of the Saumur ice-blocks is the difference of colour exhibited. Some of them, impregnated with a minute sand, and produced in the bottom of the stream, are coloured yellow, others are perfectly transparent; a large number formed in the Vienne are magnificently coloured azure blue, and many are white and opaline, owing to a large number of air bulbs which obscure the transparency.

A VERY favourable report was presented at the annual meeting, yesterday, of the Royal Microscopical Society. The total number of Fellows is now 575; improvements have been made in the library, several additions have been made to the collection of instruments and objects, and it was proposed to enlarge the journal of the Society.

THE report read at the recent annual meeting of the Birmingham Natural History and Microscopical Society showed that although the number attending the meetings during the past year had, from various causes, been somewhat smaller than usual, the work of the Society had been, on the whole, very satisfactory, resulting in the discovery of many rare animals and plants, and of four species of animals new to Great Britain. The finances of the Society were in a flourishing condition. It was announced that about 70*l*. had been expended on the library and apparatus since the establishment of the Society in 1858. We believe a special meeting of this Society will shortly be held to consider the propriety of creating a new class of Members, to be called Associates, consisting of intelligent youths of from fifteeen to twenty one years of age, who are interested in natural history. This is a step quite to be commended. Prof. Huxley has accepted the office of honorary vice-president of this Society.

A SPLENDID stalactite cavern has just been discovered in the Adams Valley (Moravia), which is celebrated for its numerous natural beauties. A peasant from the village of Sloup had the courage to penetrate into one of the numerous creeks which are found in the caves near Sloup. When he had reached the end of the creek he lit a candle, and to his astonishment found himself in a picturesque stalactite cavern measuring some 40 metres in width and length and some 25 metres in height. Stalactites of 1 or 2 metres in length descended from the ceiling, and mighty stalagmites arose from the ground like a forest of stone fir trees. The peasant announced his discovery to the Mayor of Proskowitz (the district town), who also visited the cavern and gave orders for enlarging the entrance and providing it with a gate, &c.

A LETTER from South Africa states that companies have been formed in Griqualand West and Natal to prospect for gold in Sikukuni's country, where it is known to exist.

THE additions to the Zoological Society's Gardens during the past week include two Thars (*Capra jemlaica*), six Impeyan Pheasants (*Lophophorus impeyanus*) from the Himalayas, three Horned Tragopans (*Ceriornis satyra*) from the South-East

Himalayas, a Temminck's Tragopan (*Ceriornis temminckii*) from China, a Spotted Turtle Dove (*Turtur suratensis*) from India, presented by H.R.H. the Prince of Wales, K.G.; two Black Lemurs (*Lemur macaco*) from Madagascar, presented by the Rev. G. P. Badger, D.C.L., F.Z.S.; a Sykes's Monkey (*Cercopithecus albogularis*) from East Africa, presented by Miss Mabel Beale; a Sambur Deer (*Cervus aristotelis*) from Malacca, presented by Mr. W. H. Stevenson; a Stanley Crane (*Tetrapteryx paradisea*) from South Africa, presented by Capt. Edward Jones, R.M.SS. *Conway Castle;* a Wood Owl (*Syrnium aluco*), European, presented by Mr. W. Addison; a Kittiwake Gull (*Rissa tetradactyla*), European, presented by Mr. H. R. Bower; a Hairy-nosed Wombat (*Phascolomys latifrons*) from South Australia, deposited.

OUR ASTRONOMICAL COLUMN

THE HARVARD COLLEGE OBSERVATORY.—We have received the Thirty-fourth Annual Report of the Director of this Observatory, presented to the Visiting Committee on December 5. Prof. Pickering notifies that the subscription of 5,000 dollars a year for five years, suggested in his previous Report, for relieving the immediate needs of the Observatory, more especially with regard to the publication of accumulated work, has been completed through the liberality of some seventy ladies and gentlemen, who have thus shown their interest in the establishment, an example of scientific zeal, we may say, by no means unique in the United States, nor indeed in the history of the Harvard Observatory; it may be remembered that the beautiful plates illustrating Mr. G. P. Bond's great work upon Donati's comet (Harvard *Annals*, vol. iii) were contributed by a few citizens of Boston and vicinity. The success attending the subscription has enabled both the equatorial and the meridian circle to be actively used during the year, the former frequently through the night. Photometry is still made the prominent feature in the work; vol. xi. of the *Annals* will contain the results of over 25,000 photometric observations, principally made with the large equatorial; amongst them are measurements of the outer satellite of Saturn, *Japetus*, on 101 nights in the autumn and winter of 1878-79, which, with similar observations on twenty-eight nights in the previous year, will furnish a determination of the law followed by this satellite in its changes of brightness. Another work of some extent, in the same direction, was commenced in 1879, viz., a determination of the light of all stars visible in the latitude of Harvard College; a preliminary catalogue has been formed containing all the stars in the Uranometries of Argelander and Heis, and in Behrmann's Atlas, with the stars of the *Durchmusterung* to the sixth magnitude inclusive. Most of the stars being inconspicuous objects, Prof. Pickering remarks, there would be much loss of time in identifying them in the field of a photometer mounted on an ordinary stand. This he avoids by observing them in the meridian as with a transit-instrument. "The photometer consists of a horizontal telescope pointing to the west, and having two objectives. By means of two prisms mounted in front of the telescope the pole-star is reflected into one object-glass, and the star to be measured into the other. The cones of light are made to coincide by a double-image prism, the extra images being cut off by an eye-stop. The star to be measured is thus seen in the same field with the pole star, with the same aperture and magnifying power." Errors to be apprehended in the use of the Zöllner photometer and other instruments, when the comparison is made with an artificial star are by this means eliminated. Of the work with the meridian circle, the observation of eight thousand stars in the zone + 50° to + 55° undertaken by the Observatory, and which has occupied Prof. Rogers during the greater part of eight years, was completed on January 26, 1879, and is mentioned as one of the largest astronomical undertakings which have been carried to completion in the United States; some years, it is added, will still be required to finish the reductions and publication of this work. The General Catalogue, 1874-75 (in vol. xii.) will be issued shortly, over two hundred pages being in type. Vol. xi., to which we have alluded, will be distributed in the course of the present year.

It will be seen from this summary of the contents of Prof. Pickering's Report that the Harvard College Observatory is fully maintaining the high reputation it acquired under the management of his predecessors, and the discrimination with which the subjects to which attention is directed are chosen, so as to avoid unnecessary or useless duplication of work, is not the least important point to be remarked. If this should hardly appear to apply to the proposed determination of the light of naked-eye stars, it must be remembered that the previous determinations of Argelander, Heis, &c., were made from eye-estimation, not by photometric instruments.

THE MINOR PLANETS IN 1880.—The specialty of the *Berliner astronomisches Jahrbuch* is well known to be the ephemerides of the small planets, which at the expense of a great amount of labour Prof. Tietjen has for many years kept up so nearly to our knowledge of these bodies. In anticipation of the appearance of the volume for 1882, these ephemerides applying to the year 1880 have just been circulated amongst observers. In addition to fifty-nine accurately computed ephemerides about the times of opposition of as many planets, there are approximate places for every twentieth day of the first one hundred and ninety-nine of this numerous group, excepting only *Dike* and *Scylla*, for which adequate material for calculation does not exist. Only two out of the number approach the earth during the year, within the distance 1·0, viz., *Ariadne*, in the middle of May, distance 0·923, and *Procne*, in the middle of August, distance 0·996.

That *Dike*, No. 99, should be still adrift, notwithstanding it was discovered as far back as May, 1868, is not perhaps a matter for surprise, considering that M. Borrelly, when he detected it, did not estimate its magnitude over 13·14, though it was within ten degrees from the perihelion. *Scylla* was observed for a fortnight in November, 1875, and may have been in opposition during the last autumn, though not found: from the elements in the *Annuaire* for 1879, it would not appear to be identical with No. 206, discovered by Prof. Peters at Clinton, N.Y., on October 13, 1879, and only observed for three or four days.

A GREAT COMET.—Dr. Gould, in charge of the Argentine National Observatory at Cordoba, telegraphs thus from Buenos Ayres to Prof. Peters, the editor of the *Astronomische Nachrichten*:—"Great comet passing sun northwards;" the telegram was received at Kiel on the 5th inst. The ocean cables may in future prevent such a surprise as was experienced in these latitudes on the sudden appearance of the huge comet of June, 1861, which, rising rapidly in declination and passing the sun, as Dr. Gould describes the new one, was observed simultaneously or nearly so, throughout Europe, with a tail upwards of 100° in length. The astronomical phenomena of the present year which admit of prediction, do not offer any feature of special interest, and a large comet will therefore come the more opportunely.

PHYSICAL NOTES

TWO researches on singing condensers, such as that employed in Varley's telephone, have lately been published. M. R. Chavannes, in the first of these, maintains that undulatory currents produce no sounds in such condensers; that intermittent currents are absolutely necessary. M. Trève has shown, in the second, that a pressure exerted upon the leaves of the condenser sufficient to drive out the air from between them will destroy the production of the tones; and that if the condenser is placed in an exhausted chamber it ceases to emit sounds.

IT will be remembered that in 1876 Prof. Rowland discovered the magnetic effects of electric convection. M. Lippmann has discussed, in a recent number of the *Comptes Rendus*, the converse case of the ponderomotive force exercised upon material bodies charged with electricity by the relative motion of a magnet.

CAST-IRON MAGNETS are now being made of a superior quality by M. Carré, who publishes in the *Revue Industrielle* an account of his process. A soft and very slightly carburetted metal is melted in earthen crucibles. Just previous to running into the moulds 10 to 15 per cent. of steel filings are added. In order to produce a metal which will stand tempering at a cherry-red heat, there is added either 1 to 1·5 per cent. of nickel, with 0·25 per cent. of copper, or 2·0 per cent. of tin and 0.5 per cent. of copper.

AN "acoustico-electrical kaleidoscope," the invention of M. Michelangiolo Monti, is mentioned in *Les Mondes*. It consists of a microphone used in conjunction with an induction-coil and a Geissler tube, and is, like Edmunds's phonoscope, which it